

THE NAVAJO TANNER.

BY DR. R. W. SHUFELDT, U. S. A.

(With Plates XXIII-XXVIII.)

During the summer of 1887, and at a time when the writer was stationed at Fort Wingate, N. Mex., he received a letter from his friend Prof. Otis T. Mason, Curator of the Department of Ethnology of the National Museum, informing him of the fact that there was on record no special account, so far as he was aware, describing the manner in which the North American Indians tan and prepare their buckskin.

As is well known, all of our Indians, from time immemorial, have skillfully manufactured this material and put it to an infinite number of uses to meet the necessities of the life they lead. So Professor Mason was thus prompted to contribute to this branch of our literature of the subject, and did me the honor of asking me to render an account of the process as it is practiced among the Navajoes, a tribe of Indians of which many are found living in the valleys and among the mountains about Fort Wingate.

Circumstances soon admitted of my undertaking this matter, and a Navajo hunter was dispatched to bring in a deer, for the purpose of preparing its hide directly under my personal observation, and thus allowing me to record carefully each step of the operation.

In a day or two this Indian returned with a fine doe, an adult specimen of *Cariacus macrotis*. He had skinned the legs of the animal from the hoofs up as far as the ankles, which he disarticulated partially, so the limbs could be tied more compactly together, and thus be less liable to either frighten his horse or catch in the low timber as he returned home with his game. Strange to say, this was the hardest part of my task to undertake, for the Navajo Indians have a belief that when one of them kills a deer for the purpose of tanning its skin, to make buckskin, the hide must be removed on the spot where the animal was slain, or else the successful hunter will lose his eyesight before the next moon.

I had great difficulty in finding a Navajo that had sufficiently little faith in this superstition to be overcome by a generous reward for his pains. The deer which had been captured for me had already been eviscerated and the skin divided from its chin to its tail—the entire length of the under side of the animal. He threw it down upon the ground in front of his lodge, and, as I had my camera with me, prepared for the emergency, I directed him to commence operations at once. In a moment, with a sharp hunting-knife, he divided the skin on the inside

of the thighs, from the ankles to the abdominal division, making similar incisions on the inside of the fore-limbs. The legs were quickly skinned, the small tail split up on its under side and the vertebræ removed, while with his knife the hide was started on both sides from the abdominal and throat incision and quickly removed in the direction of the animal's back. Thus it was that the skin was removed from the entire body and up to the ears first; then as he arrived at these latter, their cartilages were cut through close to the skull, leaving the great ears of this species of deer attached to the hide. When he arrived at the eyes, these were skinned round, much in the same way as a skillful taxidermist manages the eyes in any vertebrate specimen he may be preparing. Upon arriving at the muzzle he simply divided the skin all around, posterior to the external nostrils, and the operation of removing the hide was completed. During the time he was engaged in skinning the sides towards the back I succeeded in making a successful photograph of him in the act. It forms one of the illustrations of this paper. He next proceeded to dig a hole in the ground (with a spade that stood near) of a capacity about as big as a bushel. The bottom of this excavation was tramped hard with his feet and the hide placed therein, hair side up, and immediately covered entirely over with cold water from a neighboring spring. On top of the hide he placed a camp-kettle, bottom side up, and braced it down with the spade. This was to prevent the skin from drying and the kettle to keep the ravenous Indian dogs from eating it up during the night.

He now informed me that was all that was to be done to it at present, and he would not touch it until I arrived there again in the morning. Bright and early I was upon the ground, and he left camp with an ax to soon return with the trunk of a small pine tree which he had cut down in the mean time. At its thickest end it was about 6 inches through, and about 4 at the smaller extremity. From one side of the larger half he removed the bark, completely exposing the smooth surface of the wood beneath it. He next cut a deep notch in the big end of this stick, so as to assist in bracing it against the limb of a small cedar tree near by, with smooth surface facing him and the small end of the stick resting firmly upon the ground some 2 feet from the base of the aforesaid cedar tree. Around about was plentifully bestrewn some clean, short hay, to prevent the hide from being soiled upon the ground beneath. We now returned to the hole where the skin had remained over night, and it was taken out to be washed in clean water, when he proceeded with a sharp knife to remove all superfluous tissue from its raw side, skinned the ears carefully by removing completely the cartilaginous parts, then cleared away the muscles which had remained attached about their bases, trimmed off the remains of the *panniculus* muscle, and indeed left nothing but a thoroughly clean hide, which received its final dip in clean water.



1. NAVAJO INDIAN SKINNING DEER. (Page 59.)

It was now ready to have the hair shaved from it, and it was interesting to see how the parts of the animal are converted into instruments to be used again in converting other of its parts into material to supply the wants of the Indian. This seems to obtain in all of the simple manufactures of the aborigines, and deer are slain with arrows, the heads of which are attached to the shaft with sinews from the body of one of their own species; indeed, the hunter himself may be clothed in buckskin. My tanner obtained his scrapers from the bones of the forelimb of the deer he had killed, and the ulna and radius of this limb are wonderfully well-fitted to perform the work of this natural spokeshave. These bones, as we know, are in a deer, as in many other hoofed animals, quite firmly united together, having a form well known to the comparative osteologist. The shaft of the ulna, which is closely approximated to the shaft of the radius, has its posterior edge thin and sharp, which is still further improved by the tanner scraping it with his knife. The olecranon process, with the deep sigmoid notch, forms an excellent handle at one end, while the enlarged distal end of the radius, with the carpal bones, which are usually left attached, forms a good one at the other. Moreover, the curvature of the shafts of this consolidated bone is favorable for the use of our Indian tanner, who, in using this primitive instrument, seizes it at either end in his hands, and works with it in shaving off the hair much in the same manner as one of our carpenters uses a spokeshave, only here the sharp edge of the ulna bone takes the place of the knife edge in doing its special work. (See plate.)

Before proceeding further, I should mention that after removing the hide, on the first day, he placed the skinned head of the deer, without the lower jaw, in the ashes of a low camp-fire, where the brains were able to become semi-baked during the first night, as these parts, too, are utilized in the tanning process.

Next to shaving off the hair, the hide is thrown over the small log he had arranged against the tree in the morning, being held in place by catching the skin of the head between the notch and the limb, the skin of the hinder parts being always nearest the ground, and as the work proceeds it is deftly shifted about by the tanner.

Now all the hair except on the lower parts of the legs and the tail, is rapidly scraped off with these bone scrapers, including the black epidermis.

Some tanners use a deer's rib, or a beef's rib, and others a dull hunting-knife, but the bones of the deer's forearm is the usual instrument, and it is quite remarkable to observe how handily it is managed, and how rarely a hole is cut in the skin. The shaving is carried to the very edges of the hide all around, and even the backs of the ears are carefully scraped, the entire operation lasting from two to four hours, depending upon the size of the deer. After my Navajo had got well started into this part of his work, I was successful in obtaining a good

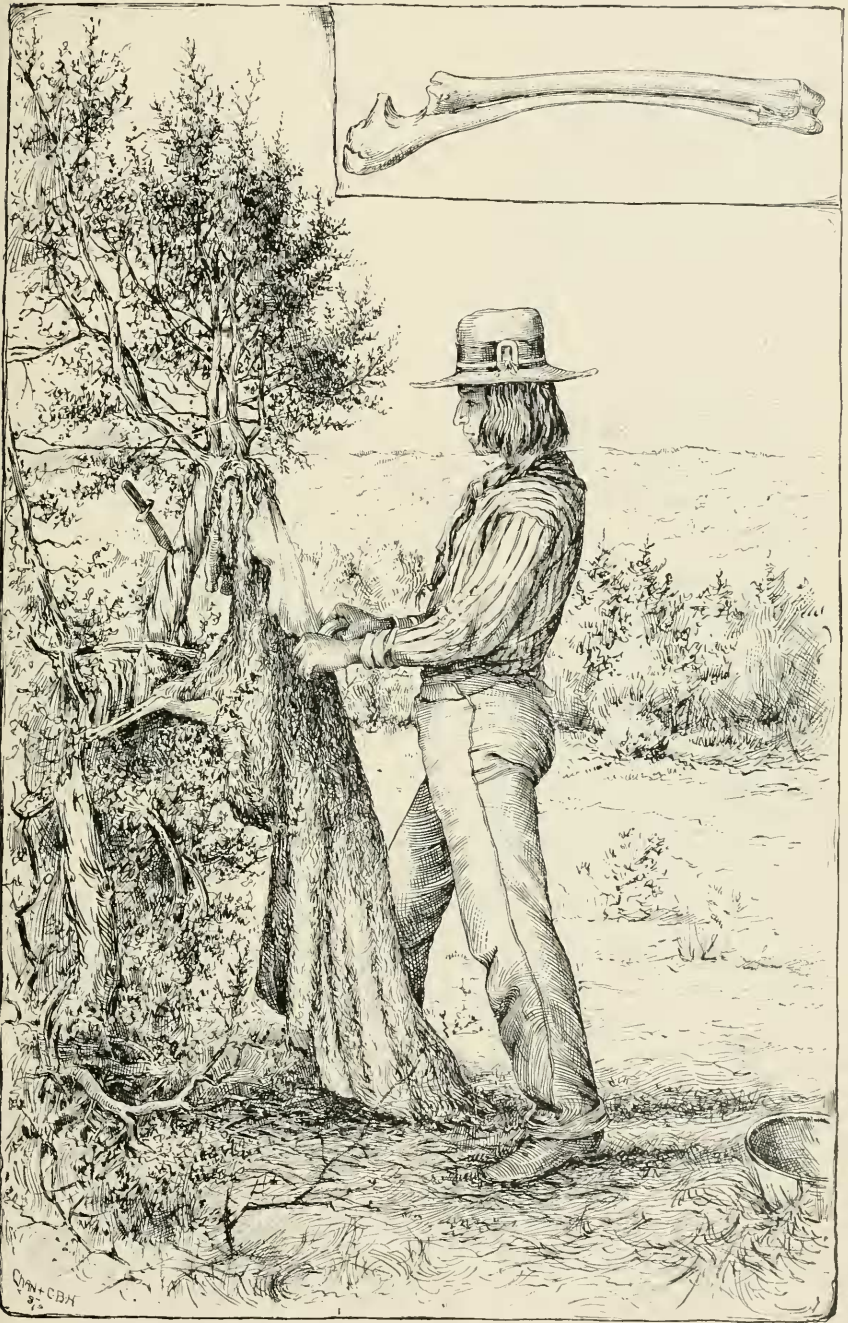
photograph of him, a copy of which is herewith presented in fig. 2 (see plate), showing him in the act of drawing down his scraper.

In appearance the hide now has the same form as when removed from the animal; the hair side is clean and white, the body side devoid of all superfluous tissue, the backs of the ears still showing the black epidermal layer of the skin, as it is only from these parts where it is not scraped off with the hair; the hair also is left on the skin of the lower halves of the four limbs.

A thorough washing is now given it in several changes of clear, cold water, though sometimes in the last wash the water may be made slightly tepid, and in this it is allowed to stand while the tanner prepares the brains of the animal soon to be used in another stage of his work.

Picking up the deer's skull from the ashes where he had left it the night before, he took an ax and split it along the bifrontal suture, cleaving the skull partly in two; then chipping off the parietal bones he was enabled to lift out the brains nearly entire. They were at once transferred to a basin of tepid water, where by gentle manipulation the little slivers of bone (which had gotten into it while splitting the cranium), the blood, etc., were effectually removed. Next they were placed in a small quantity of tepid water in another basin and put upon a low fire, where they were allowed to simmer for over an hour. At the end of this time the water then being not so hot but that one could comfortably hold his hand in it, had come to be of a muddy color, and our tanner, using the fingers of one hand as a sieve, lifted out from the water the little particles of brain in a small pile upon the palm of his opposite hand; then, by rubbing this together between the palms of his hands, it was soon reduced to a pasty mass. This process was continued until all the brains were thus reduced and dissolved, and then the water in which they were had about three times its quantity of clear tepid water added to it, nearly filling the small basin. The fluid had every appearance of, and quite agreed in consistency with, a big bowl of ordinary bean soup, and it was now ready for use, being left just near enough to the camp-fire to keep it warm, and no more.

Returning to the skin, it was now removed from the water where it had been left, carefully rinsed, and wrung out with the hands in a manner much as we see washerwomen wring out clothes, and carried over to the tree where the scraping process had been done. Here the tanner selected a small limb, about 5 or 6 feet from the ground, and passed the head and neck of the hide under and over it, and then carefully folded this latter part lengthwise along the middle of the body surface of the hide, and twisted the whole over and over till he came to the forelegs. It will be seen that the limb was firmly infolded within a loop of the hide, and by pulling heavily upon it I saw that there was no such thing as its slipping. In a similar manner the skin of the forelegs was folded lengthwise inside the hide; then the borders of the abdominal in-



2. NAVAJO INDIAN REMOVING HAIR FROM DEERSKIN. (Page 62.)

